closely related to the target organ damage. It can be provided the basis for the intervention of cardiovascular risk.

http://dx.doi.org/10.1016/j.hkjn.2015.09.147

0051
Relationship Between Serum Level of Fibroblast Growth Factor-23 (FGF-23) and Calcium and Phosphate Metobolism of Patients with Chronic Kidney Disease

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Objective: To investigate the relationship between serume level of fibroblast growth factor-23 (FGF-23) and calcium and phosphate of patients with chronic kidney disease.
Methods: Intact FGF-23 and 1,25(OH)$_2$ vitamin D$_3$ were detected by enzyme-linked immunosorbent assay (ELISA) in CKD 151 patients with various degree of renal function and fourteen healthy controls, at the same time, some other parameters including creatinine, serum phosphate, calcium, parathyriod hormone, uric acid and alkaline phosphatese were measured. Further, the relationship between FGF-23 and other biochemical variables was analysed.
Results: (1) The level of serum FGF-23 was gradually elevated at CKD stage 1,2−3,4−5, there were significant difference in CKD stage 2−3 and 4−5 compared respectively with normal controls ($P < 0.01$), and in CKD stage 4−5 compared with CKD stage 1 and 2−3 ($P < 0.01$). (2) In the CKD stage 1−5 the level of serum FGF-23 by Pearson relativity analysis was significantly correlated positively with creatinine ($r = 0.97$, $P < 0.01$), phosphate ($r = 0.65$, $P < 0.01$), and parathyroid hormone ($r = 0.536$, $P < 0.01$). The level of serum FGF-23 by Pearson relativity analysis was significantly correlated negatively with eGFR ($r = -0.578$, $P < 0.01$), 1,25(OH)$_2$ vitamin D$_3$ ($r = -0.586$, $P < 0.01$). (3) In the CKD stage 1−5, creatinine, 1,25(OH)$_2$ vitamin D$_3$ and parathyroid hormone were significant variables that influenced the level of serum FGF-23 in multiple regression analysis.
Conclusion: FGF-23 concentrations were gradually elevated in three groups of patients with CKD, serum phosphorus, 1,25(OH)$_2$D$_3$, intact PTH and creatinine are the major regulators that influenced FGF-23.

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Table 2 151例CKD患者FGF-23与相关变量的相关分析

N = 151	*r*-value	*P*-value
CREA	**0.971**	**<0.01**
eGFR	**-0.578**	**<0.01**
1.25(OH)$_2$D$_3$	**-0.586**	**<0.01**
Ca	-0.327	<0.01
P	**0.650**	**<0.01**
Ca*P	0.477	<0.01
UA	0.173	0.033
ALP	0.143	0.079
PTH	**0.536**	**<0.01**

http://dx.doi.org/10.1016/j.hkjn.2015.09.148

0052
Function of Reduced Blood Pressure by Compound a-Ketoacid in Non-dialysis Patients with CKD Stage 3−5

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Objective: Evaluate the effect of blood pressure-lowering by a-ketoacid in patients with CKD.
Methods: Selected non-dialysis patients who had hypertension of CKD 3−5 grade, except three cases. All of the patients had taken anti-hypertension medicine over 3 months. They were treated for an average of 34.5 ± 38.7 months, but SBP was still ≥ 140 mmHg and DBP ≥ 90 mmHg. A total of 102 patients were included in the statistical analysis. Among them, 61 were male and 41 were female. Mean age was 70.78 ± 12.34 years (range, 27 to 86 years). 51 cases were CKD stage 3, 31 cases were CKD stage 4, 20 cases were CKD stage 5. Mean duration of chronic renal insufficiency was 32.7 ± 33.3 months (range, 4 to 120 months). Mean duration of hypertension was 232.4 ± 174.4 months (range, 4 to 636 months). A low protein diet (0.6 g/kg·d) and compound a-ketoacid (2.52 g, tid) were given to all patients. At the same time, the anti-hypertension drugs were not changed during the study. After 6 months, statistical analysis was used to compare blood pressure, PTH and renal function changes before and after treatment.
Results: In 102 cases, total efficiency rate was 83.3%. Mean systolic blood pressure was 163.4 ± 15.8 mmHg before treatment and 137.8 ± 14.8 mmHg after treatment. Mean diastolic blood pressure was 87.9 ± 12.9 mmHg before treatment and 77.0 ± 9.6 mmHg after treatment ($P < 0.01$). Mean systolic blood pressure decreased 25.9 ± 14.8 mmHg and diastolic blood pressure decreased 10.8 ± 9.7 mmHg. There were statistically significant differences. PTH had markedly decreased after treatment, but there was no statistically significant differences in renal function before and after treatment.
Conclusion: Low protein diet combining compound a-ketoacid may help to control hypertension in CKD patients.

http://dx.doi.org/10.1016/j.hkjn.2015.09.149

0055
Risk of Death and Cardiovascular Outcomes in Chronic Kidney Disease Patients with Chronic Obstructive Pulmonary Disease

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Objective: Chronic obstructive pulmonary disease (COPD) increases all-cause mortality and cardiovascular (CV) events in general population. However, rare study investigates the death and CV risks among chronic kidney

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Table 1 CKD1-5期患者血清各指标的比较($\bar{x} \pm s$)

		CREA (μmol/l)	eGFR (ml/min/1.73 m^2)	FGF-23 (pg/ml)	1.25(OH)$_2$D$_3$ (pg/ml)	Ca (mmol/L)	P (mmol/L)	Ca*P (mmol2/L2)	PTH (pg/l)
正常对照组 N = 14 ($\bar{x} \pm s$)		43.8 ± 2.71	118.81 ± 5.42	20.82 ± 1.20	595.11 ± 10.03	2.27 ± 0.19	1.15 ± 0.13	2.61 ± 0.43	33.81 ± 1.47
CKD1期 N = 22 ($\bar{x} \pm s$)		69.82 ± 13.20	112.62 ± 8.18	71.19 ± 8.26	546.78 ± 102.66	2.27 ± 0.17	1.23 ± 0.15	2.79 ± 0.41	38.59 ± 3.29
CKD2-3期 N = 47 ($\bar{x} \pm s$)		139.90 ± 35.19	58.97 ± 16.96*	81.73 ± 13.23*	531.12 ± 114.74	2.24 ± 0.22	1.35 ± 0.15*	3.02 ± 0.40	68.14 ± 30.13
CKD4-5期 N = 82 ($\bar{x} \pm s$)		440.74 ± 331.36*△	15.75 ± 7.67*△	198.05 ± 111.68*△	409.03 ± 130.51*△	2.10 ± 0.21	1.81 ± 0.13*△	3.80 ± 0.43	225.41 ± 172.42*△
方差分析	F	28.67	593.98	38.46	19.9	7.22	209.01	26.44	69.22
	P	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01

*和对照组比较，P<0.05；△与CKD1、CKD2-3比较，P<0.05.

disease (CKD) with COPD. This population-based cohort study aimed to evaluate the all-cause mortality and major CV events of COPD among CKD patients using national health insurance (NHI) database in Taiwan.
Methods: CKD patients enrolled in the pre-end stage renal disease (pre-ESRD) care management program, patients $\geq$ 40 years old who had at least one outpatient diagnosis code (ICD-9 codes 585, 581.9) or at least one inpatient diagnosis code and free of any dialysis or renal transplant from 1 January 2007 to 31 December 2011 were included. CKD patients with COPD were matched to control subjects without COPD at a 1:1 ratio using propensity scores. Cox proportional hazards regression models were used to estimate hazard ratios (HRs) for all-cause mortality and major CV events analysis.
Results: Propensity score matching yielded a cohort balanced on age, sex, urbanization, socioeconomic status, enrolled year, comorbidities, Charlson Comorbidity Index score, clinical laboratory data, and medications used, with 2498 CKD patients in the COPD group and 2498 in the non-COPD group. CKD patients with COPD were associated with a higher risk for death (HR, 1.134; 95% CI, 1.037—1.241) and non-significant risk for major CV events (HR, 1.041; 95% CI, 0.905—1.198) compared to those without COPD.
Conclusion: CKD patients with COPD are associated with higher all-cause mortality and might increase risk of major CV events.

http://dx.doi.org/10.1016/j.hkjn.2015.09.150

0086
Association Between Anemia and Abnormal Bleeding Times in Patients with Chronic Kidney Disease

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Objective: Platelet dysfunction associated hemorrhagic complications and chronic anemia are often encountered in patients with chronic kidney disease. The present study aimed to evaluate the association of anemia and abnormal bleeding time in patients with chronic kidney disease.
Methods: We retrospectively analyzed the data of 1022 (60.24 $\pm$ 15.89 years, men 58.7%). patients with chronic kidney disease.
Results: Patients with prolonged bleeding time (bleeding time $>$ 182 sec) were older age and lower eGFR, Hgb, Hct and PLT, and higher BUN and Cr levels compared to those with normal bleeding time. The prevalence of abnormal bleeding time was found to be higher as Hgb declined [25.0% for patients with Hgb $\geq$ 10 mg/dl (n = 595), 31.9% for patients with 8 $\leq$ Hgb $<$ 10 mg/dl (n = 343), and 43.4% for patients with Hgb $<$ 8 mg/dl (n = 84), P $<$ 0.001, respectively]. eGFR was decreased as Hgb declined (29.8 $\pm$ 19.0 mL/min/1.73 m^2 in patients with Hgb $\geq$ 10 mg/dl, 16.0 $\pm$ 13.0 mL/min/1.73 m^2 in patients with 8 $\leq$ Hgb $<$ 10 mg/dl, and 10.3 $\pm$ 8.61 mL/min/1.73 m^2 in patients with Hgb $<$ 8 mg/dl, P $<$ 0.001, respectively). Multivariate analysis revealed that age (OR, 1.019; 95% CI, 1.010—1.029), 8 mg/dl $\leq$ Hgb $<$ 10 mg/dl (OR, 1.214; 95% CI, 0.873—1.686), Hg $<$ 8 mg/dl (OR, 1.820; 95% CI, 1.084—3.055), 15 mL/min/1.73 m^2 $\leq$ eGFR $<$ 30 mL/min/1.73 m^2 (OR, 1.616; 95% CI, 1.053—2.481), eGFR $<$ 15 mL/min/1.73 m^2 (OR, 1.668; 95% CI, 1.160—2.397), thrombocytopenia (PLT $<$ 150 $\times$ 10^9/L) (OR, 2.659; 95% CI, 1.981—3.569) were independently associated with prolonged bleeding time.
Conclusion: Severe anemia (Hgb $<$ 8 mg/dl) is independently associated with prolonged bleeding time in chronic kidney disease, even after adjusting for eGFR and other potential confounders.

http://dx.doi.org/10.1016/j.hkjn.2015.09.151

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Low Plasma Level of Cathelicidin is Associated with Decreased eGFR

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Objective: This study assessed plasma cathelicidin, 25-OH vitamin D, and natural killer (NK) cells which play an important role in innate immunity.
Methods: The study cohort included 175 patients who have a variety of estimated glomerular filtration rate (eGFR) at the Chonnam National University Hospital. Plasma catehlicidin level was measured by ELISA and absolute count of NK cell was determined by flow cytometry. NK cell was identified phenotypically as CD3-CD56+.
Results: The study population was divided into 3 groups according to the eGFR: Group I, eGFR $\geq$ 60 mL/min/1.73 m^2, n = 33 (18.9%); group II, 15 $\leq$ eGFR $<$ 60 mL/min/1.73 m^2, n = 47 (26.8%); group III, eGFR $<$ 15 mL/min/1.73 m^2, n = 95 (54.3%), respectively. Plasma cathelicidin level was decreased with lower eGFR (189.3 $\pm$ 18.21 ng/ml in group I, 182.6 $\pm$ 17.69 ng/ml in group II, and 179.7 $\pm$ 17.76 ng/ml in group III, P = 0.032, respectively). On the other hand, percentages and absolute numbers of NK cells were significantly higher in the peripheral blood of patients with lower eGFR (1897.7 $\pm$ 1584.05 in group I, 2110.8 $\pm$ 2168.37 in group II, and 2833.8 $\pm$ 2149.65 in group III, P = 0.034, respectively). A 25-OH vitamin D was not distinguished in these groups, but after an exclusion of pateints with hemodialysis, 25-OH vitamin D level showed decreasing tendency with lower eGFR (16.4 $\pm$ 6.22 ng/ml in group I, 12.4 $\pm$ 4.74 ng/ml in group II, and 11.2 $\pm$ 4.96 ng/ml in group III, P = 0.166, respectively).
Conclusion: Plasma cathelicidin level was significantly decreased with lower eGFR while an absolute count of NK cells was increased with lower eGFR, which might be associated with dysfunction of NK cells. After an exclusion of patients with hemodialysis, 25-OH vitamin D concentration showed decreasing tendency with lower eGFR.

http://dx.doi.org/10.1016/j.hkjn.2015.09.152

0088
Calciphylaxis and Hydroxyapatite Crystal Deposition in a Patient with Uremia

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A 42-year-old male patient with uremia on hemodialysis was admitted due to right foot ulcer and infection. Two years ago, he lost sight in the right eye due to calcium salt deposition. One year ago, he developed multiple peri-articular masses with progressive enlargement, which were identified as hydroxyapatite. Acral gangrene occurred repeatedly throughout the course of disease. Radiology indicated diffuse and continuous calcification of middle and small arteries. Concomitant calcific uremic arteriolopathy and hydroxyapatite crystal deposition disease were considered. The diseases originated from abnormal disposition of hydroxyapatite in conjunctiva, vessels and articular peripheries and shared a common pathogenesis.

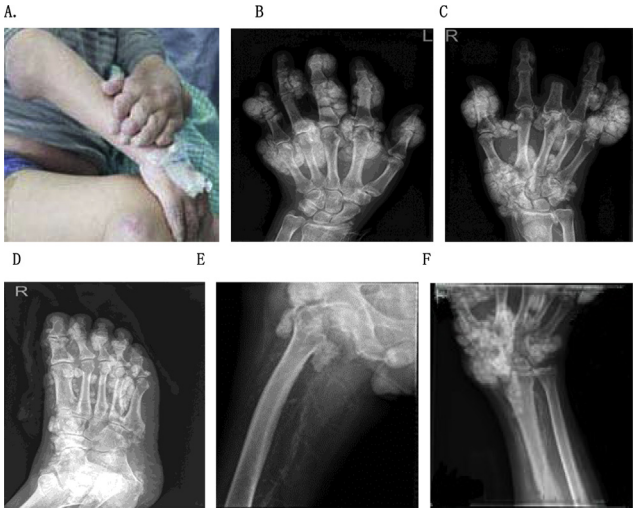

Fig.1 A. Multiple juxtra-articular masses near bilateral elbow joints, wrist joints, metacarpophalangeal joints, interphalangeal joints, toe joints and knee joints. B, C, D , E , F. X-ray manifestations: mass-like calcification shadows in the peripheries of multiple joints all over the body; subcapital fracture of right femur; linear calcification of middle and small arteries of limbs, calcification of reticular vessels.